

Claims

1. (presently amended) A thin film magnetic recording head for use with a magnetic recording medium comprising:
 - a yoke including a main pole piece of ferromagnetic material and a return pole piece of ferromagnetic material; and
 - a floating-trailing shield of ferromagnetic material positioned on an opposite side of the main pole piece from the return pole piece, the floating-trailing shield being separated from the yoke by non-magnetic material, and the floating-trailing shield having an off-center thickness perpendicular to an air-bearing surface that is larger than a thickness at a center of the floating-trailing shield as viewed from the air-bearing surface.
2. (original) A thin film magnetic recording head of claim 1 wherein the floating-trailing shield has a first area on the air-bearing surface that is larger than a second area of the main pole piece on the air-bearing surface and the first area is selected to generate a first magnetic reluctance between the main pole piece and the shield that is substantially greater than a second magnetic reluctance between the shield and a magnetically soft underlayer in the magnetic recording medium.
3. (original) The thin film magnetic recording head of claim 1 wherein the main pole piece has a first area on an air-bearing surface of the head and the floating-trailing shield has a second area on the air-bearing surface and the second area is substantially greater than the first area.

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4. (presently amended) The thin film magnetic recording head of claim 1 wherein the main pole piece has a tip that extends from an air-bearing surface of the head to a flare point on the main pole piece; and

the floating-trailing shield has a thickness through the center of the floating-trailing shield measured perpendicular to the air-bearing surface that is less than a length of the tip from the air-bearing surface to the flare point.

5. cancelled

6. (original) The thin film magnetic recording head of claim 1 further comprising a layer of electrically conductive metal separating the floating-trailing shield from the main pole piece.

7. (withdrawn) The thin film magnetic recording head of claim 1 wherein the floating-trailing shield extends around first and second sides of the main pole piece forming first and second side gaps.

8. (withdrawn) The thin film magnetic recording head of claim 7 wherein the first and second side gaps are approximately one to two times a predetermined distance from the air-bearing surface to a soft underlayer in the magnetic recording medium.

9. (original) A thin film magnetic recording head for use with a magnetic medium with a magnetically soft underlayer comprising:

- a main pole piece of ferromagnetic material;
- a return pole piece of ferromagnetic material;
- a layer of electrically conductive metal adjacent to the main pole piece on an opposite side of the main pole piece from the return pole piece; and
- a floating-trailing shield of ferromagnetic material positioned adjacent to the layer of electrically conductive metal so that the layer of electrically conductive metal separates the floating-trailing shield from the main pole piece.

10. (original) The thin film magnetic recording head of claim 9 wherein a first magnetic reluctance between the main pole piece and the shield that is substantially greater than a second magnetic reluctance between the floating-trailing shield and the magnetically soft underlayer.

11. (original) The thin film magnetic recording head of claim 10 wherein the first magnetic reluctance is approximately ten times the second magnetic reluctance.

12. (original) The thin film magnetic recording head of claim 9 wherein the main pole piece has a first area at an air-bearing surface of the head and the floating-trailing shield has a second area on the air-bearing surface and the second area is substantially greater than the first area.

13. (original) The thin film magnetic recording head of claim 9 wherein the main pole piece has a tip that extends from an air-bearing surface of the head to a flare point on the main pole piece; and
the floating-trailing shield has a thickness measured perpendicularly to the air-bearing surface that is less than a length of the tip from the air-bearing surface to the flare point.

14. (original) The thin film magnetic recording head of claim 9 wherein the floating-trailing shield has an off-center thickness perpendicular to an air-bearing surface that is larger than a thickness at a center of the shield as viewed from the air-bearing surface.

15. cancelled

16. cancelled

17. cancelled

18. cancelled

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